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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/026,481 | 12/27/2001 | Jin-Hee Jung | 8733.572.00 | 7750 |

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| EXAMINER | |
|---|---|
| PARKER, KENNETH | |
| ART UNIT | PAPER NUMBER |
| 2871 | |

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/026,481 | JUNG, JIN-HEE | |
| | Examiner | Art Unit | |
| | Kenneth A Parker | 2871 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *24 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

**Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woodgate 6055103 in view of Faris et al 2002059013, Fujii et al 6072566 and Seiberle 6496239.**

Woodgate showns in figure 26 has a three-dimension display apparatus including a liquid crystal display (1) ; a first polarizer (32- labeled in other figures) on the rear surface of the liquid crystal display; a second polarizer 14 on the front surface of the liquid crystal display, a retader barrier 11

and a third polarizer 15 on the liquid crystal polymer (although not directly on in figure 26, however directly in some other figures) for selectively transmitting the incident light from the liquid crystal polymer; and a light source 3 below the first polarizer.

Lacking is the a liquid crystal polymer on the second polarizer including a chiral dopant and liquid crystal molecules, wherein the liquid crystal polymer is divided into first regions through which incident light is not polarized and second regions through which the incident light is polarized at approximately 90 degrees.

Broadly, Woodgate shows the claimed structure, however lacks the chiral material and the associated twist structure and employs in it's place a patterned

birefringent sheet. Faris et al teach that a TN cell (which has chiral material) is suitable for providing the rotation given by the waveplate of Woodgate, with one of their choices as 0 and 90 degree twists for the different regions, and another choice of +45 and –45 fro the two twist regions. Faris teaches that the twisted technique avoids poor spectral characteristics associated with the wave plate (below), and explicitly indicates that their invention is a substitute for the micropol with a lambda/2 plate (also described below), which is the type of polarizer employed by Woodgate:

0003] Reveo Inc. has previously invented, developed, and commercialized a 3D-display technology using a micropol (.mu.Pol) panel in which patterned polarizers having alternate lines of perpendicular polarization are used in conjunction with polarizing glasses. In this technique, polyvinyl alcohol (PVA) .lambda./2 retarder has been the base for building the .mu.Pol array. The fundamentals of this .mu.Pol rely on the .pi. phase shift induced by PVA. The .mu.Pol is built in such a way that it consists of alternately spaced lines with and without the .pi. phase shifter, as schematically shown in FIG. 1.
[0004] The advantages of such a .mu.Pol include:
[0005] Simple processing;
[0006] Low cost;
[0007] High throughput;
[0008] However, the PVA based .mu.Pol has its own shortcomings:
[0009] Poor spectral characteristics due to the phase shift mechanism;

[0059] Fill in polymerizable nematic liquid crystal with light chiral concentration so that a TN cell (film) is made;

Fujii et al has the TN type polymer

s shown in FIG. 6(a), the photopolymerized liquid crystal material has an arrangement in which the axes of liquid crystal molecules 36 are sequentially rotated along the direction of the thickness of the photopolymerized liquid crystal material so that the alignment directions of the liquid crystal molecules 36 differ by 90.degree. with respect to the light incident surface and the light outgoing surface. With this arrangement, the plane-polarized light incident on

the optical rotatory plate 35 leaves the optical rotatory plate 35 after the plane of polarization is rotated by 90.degree.. Here, the liquid crystal molecules 36 have different index of refraction for the long axis and for the short axis.

Fujii et al teaches a group of benefits :

0) Further, according to the above-arrangement, it is not required to combine two substrates having the polarization region as it has been required conventionally. Therefore, the optical rotatory devices 6 and 6' can be manufactured by a simpler method than the conventional method. Further, since the process for combining of two substrates is not required, the problem of positioning error during combining the substrates does not occur. Thus, in the case where optical rotatory devices 6 and 6' manufactured by the described method are employed in a stereoscopic image display device, a stereoscopic image display device having an excellent visibility in which no black line and blank occur can be realized.
(41) Further, according to the described arrangement, an optical rotatory device can be manufactured by simpler method than that employed in manufacturing a conventional micro polarizing plate and a micro retardation plate. Therefore, in the case of providing a the stereoscopic image display device in which an optical rotatory device manufactured by the described method is provided in a display device, it is possible to provide a stereoscopic image display device with a high quality displaying at a low cost.

Therefore it would have been obvious, in the device of Woodgate, to employ a layer with liquid crystal polymer with a chiral material to employ a TN type rotating structure with rotating and non-rotating regions in place of the double region birefringent film of Woodgate in order to have an improved spectral characteristics as taught by Faris and the improved manufacturing benefits taught by Fujii.

Claim 2 adds to claim 1, wherein the liquid crystal molecules in the first regions are arranged parallel to an optic axis of the second polarizer, which is shown in figure 7/

Claim 3 adds to claim 2, wherein the liquid crystal molecules in the second regions are twisted at approximately 90 degrees to the axis of the second polarizer, which is also shown in figure 7.

Claims 4 and 5 add to claim 1, wherein the third polarizer transmits the light from the first regions and second region respectively, which is shown in the primary reference (both portions transmit)

Claim 6 adds to claim 1, wherein the liquid crystal display shows two-dimension images, which is discussed thoughout Woodgate.

Claim 7 adds to claim 1, wherein the liquid crystal polymer has at least one of e-mode and o-mode. As the E and O mode are the complete set of polarizer possiblities, so it is inherent that one of the two is what the film is.

Claims 8-15 and are method versions of the corresponding device claims, and are therefore rejected for the same reasons as the claims in device form above.

***Election/Restrictions***

Applicant's election without traverse of group 1 in Paper No. 6 is acknowledged. However, claims 8-15 have been examined with the elected claims as they were

method versions of the device claims, listing only steps of providing the device limitations.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth A Parker whose telephone number is 703-305-6202. The examiner can normally be reached on 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.

Kenneth A Parker
Primary Examiner
Art Unit 2871

December 15, 2003